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**Subject:** Santa Susana Mountain Park Association Comments on DEIS, NASA Portion of the Santa Susana Field Laboratory, Ventura County, CA  
**Date:** Saturday, September 28, 2013 2:24:58 PM  
**Attachments:** [NASA DEIS Commentary by SSMPA final.pdf](#)  
[NASA DEIS Letter Attachments.pdf](#)  
[NASA Inspector General Report IG-13-007 Feb 2013.pdf](#)

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Please find our comments on the Draft Environmental Impact Statement recently issued by NASA for the Santa Susana Field Laboratory.

We have included a full copy of the NASA Inspector General's Report from February 2013, as this is an excellent and seemingly independent summary of the political issues affecting the cleanup and in many respects, says more in 46 pages than the entire Draft Environmental Impact Statement.

If you have any questions, please email us, or I can be reached by telephone at 818 326-1533.

Teena A Takata  
President, SSMPA  
818 326-1533

NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory Actions for Response to OIG Recommendation	
Action	Estimated Completion Date
Working with DTSC to establishing appropriate cleanup standards (called Look-up Tables in AOC).	Summer 2013
Follow outcome of SB-990 law suit appeal.	Ongoing; decision expected in 2013
Follow Tribal interest and demands.	Ongoing; TBD
Through the NEPA process, thoroughly evaluating the impacts from a "cleanup to background" and attempting to minimize those impacts.	Spring 2014
Assist DTSC to evaluate impacts to a "cleanup to background" through its CEQA process.	Winter 2015
Seek cost-effective cleanup methods. This will be an ongoing process to examine various technologies.	Winter 2015

Again, thank you for the opportunity to review and comment on the subject draft report. If you have further questions or require additional information on the Agency's response to the subject draft report, please contact Olga M. Dominguez at 202-358-2800 or e-mail [olga.m.dominguez@nasa.gov](mailto:olga.m.dominguez@nasa.gov).

*Woodrow Whitlow, Jr.*

Woodrow Whitlow, Jr.

cc:  
Assistant Administrator for Strategic Infrastructure/Ms. Dominguez  
Director, Environmental Management Division/Mr. Leatherwood

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<p>SSFL site should be cleaned up to a stricter standard than would be required under generally applicable State law?</p> <p>MR. ROBINSON: Objection; lack of foundation.</p> <p>THE WITNESS: No.</p>
<p>104. If SB 990 could not be applied to all of the contamination at SSFL, it would not be possible to “sum” the risks for the entire site and to develop “cumulative risk” assessment as required by SB 990.</p>	<ul style="list-style-type: none"> <li>• <b>Not Disputed</b></li> </ul>
<p>105. There is no technical, scientific, or environmental basis to single out SSFL for more onerous cleanup procedures than apply to other contaminated sites in California.</p>	<p><b><u>Boeing’s Evidence</u></b></p> <ul style="list-style-type: none"> <li>• Malinowski Dep. [28:22] – [29:3] (“Q. Is there anything that you can identify about the SSFL site that poses a more significant threat to public health than other sites in the state? ... [A.] I am not aware of any imminent threat that is posed by SSFL at this point based on the available information I’ve had.”);</li> <li>• <i>Id.</i> at [95:21] – [96:1] (“Q. Does the chemical contamination that is present at SSFL pose a different risk to the public or the environment than the similar chemical contamination found on the other industrial sites in the state? ... [A.]</li> </ul>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<p>No.”);</p> <ul style="list-style-type: none"> <li>• <i>Id.</i> at [96:2] – [96:11] (“Q. ... Am I correct that there are also other sites in the state that contain radiological contamination? A. Yes. Q. Is there anything about the radiological contamination that is present at SSFL that poses a different risk to the public or the environment than radiological contamination present at other sites in the state of California? A. Not to the best of my knowledge, no.”);</li> <li>• <i>Id.</i> at [136:2] – [136:17] (“Q. ... [I]s there anything about either the chemical or radiological contamination at SSFL that, in your view, would justify applying a different approach to the cleanup at SSFL than at other sites in the state? ... [A.] ... No. Q. ... Is there anything else about the site other than the chemical or radiological contamination, and putting aside SB 990 for the moment, that would, in your view, justify applying a different approach to the cleanup at SSFL than at other sites in the state? ... [A.] No.”);</li> <li>• Brausch Dep. [107:17] – [107:22] (Q. Can you identify any reason to conclude that the SSFL site should be cleaned up to a stricter standard than would be required under generally applicable State law? ... A. ... No.”).</li> </ul>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<p><u><i>DTSC Response</i></u></p> <p><b>Disputed.</b></p> <p><u>Objection:</u> Defendant objects to Statement of Fact # 105 in that it mischaracterizes the witnesses' testimony cited [above] – the witnesses did not testify that there is no technical, scientific or environmental basis to single out SSFL for more onerous cleanup procedures that apply to other contaminated sites in California.</p>
<p>106. McClellan Air Force Base, roughly the same size as SSFL, is seven miles from Sacramento and is contaminated with all of the same contaminants listed in SB 990, many in higher concentrations, including TCE.</p>	<p><u><i>Boeing's Evidence</i></u></p> <ul style="list-style-type: none"> <li>• Malinowski Dep. [26:3] – [26:23] (McClellan Air Force Base close to major population centers);</li> <li>• <i>Id.</i> at [28:7] – [28:9] (“[A.] McClellan Air Force Base was the most polluted Air Force Base out of all the Air Force. It ranked the highest.”);</li> <li>• <i>Id.</i> at [34:9] – [36:16];</li> <li>• <i>Id.</i> at [101:11] – [102:12];</li> <li>• <i>Id.</i> at [128:11] – [134:24] (higher concentrations of volatile organic compounds than SSFL);</li> <li>• <i>Id.</i> at [141:11] – [141:16];</li> <li>• <i>Id.</i> at [144:6] – [148:22] (“... Q. In your view, is the McClellan Air Force Base a fairly similar site to the SSFL site in terms of the contamination that is present? A. The types of contamination, yes. ... Q. There was TCE as well; is that right? A. Yes.);</li> </ul>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<ul style="list-style-type: none"> <li>• Greger Dep. [68:7] – [68:16];</li> <li>• Bowers Decl. ¶¶35, 50, 53, 55, 58, 64;</li> <li>• Ex. 6 to Bowers Decl., <i>Public Health Assessment, McClellan Air Force Base, Sacramento, Sacramento, California</i> at 1-5 (Agency for Toxic Substances and Disease Registry 1994);</li> <li>• Ex. 7 to Bowers Decl., <i>McClellan Air Force Base Administrative Record 6504</i> at 2-1 (EPA 2008);</li> <li>• Ex. 8 to Bowers Decl., <i>McClellan Air Force Base (Groundwater Contamination)</i> at 2, 3, 7 (U.S. EPA Region 9);</li> <li>• Ex. 9 to Bowers Decl., <i>Five Year Review; Former McClellan Air Force Base, California, July 2009</i>, at 3-1 (MWH Americas, Inc.);</li> <li>• Ex. 10 to Bowers Decl., <i>Proposed Plan for Soil Cleanup, McClellan AFB Parcel C-6</i> at 3 (EPA October 2008).</li> </ul> <p><b><u>DTSC Response</u></b></p> <p><b>Disputed.</b></p> <p><u>Objection:</u> Witnesses lack personal knowledge. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (<i>i.e.</i>, a complete characterization of the SSFL site); see State’s. SUF, ¶ 117.</p>

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1	Uncontroverted Fact	Boeing Evidence, DTSC Response
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	107. Lawrence Livermore National Laboratory, more than twice the size of SSFL, is 48 miles from San Francisco and is a DOE laboratory used for nuclear weapons and other research. It is contaminated with all of the same contaminants listed in SB 990. Among other things, it has had higher historical concentrations of TCE and tritium than SSFL.	<p><b><u>Boeing's Evidence</u></b></p> <ul style="list-style-type: none"> <li>• Malinowski Dep. at [101:11] – [102:12];</li> <li>• <i>Id.</i> at [163:13] – [163:24] (Lawrence Livermore close to major population centers);</li> <li>• <i>Id.</i> at [169:7] – [175:16] (“Q. Is the list of contaminants at the Lawrence Livermore National Laboratory similar to the list of contaminants of concern at SSFL?... A. Looking both together?... I would say they’re similar, yes.”);</li> <li>• <i>Id.</i> at [173:5] – [173:16] (“Q. [I]s there anything about [Lawrence Livermore National Laboratory] that would support taking a different approach to the cleanup than at SSFL? ... [A.] No.”);</li> <li>• <i>Id.</i> at [175:12] – [175:16] (“Q. Is it fair to say that the principal contaminants of concern at Lawrence Livermore National Laboratory are found in higher concentrations than the same contaminants found at SSFL? A. For those that I am aware of, yes.”);</li> <li>• Bowers Decl. ¶¶32, 39, 48-49, 51-53, 58, 60, 62;</li> <li>• Ex. 4 to Bowers Decl., <i>Site-Wide Record of Decision Lawrence Livermore National Laboratory Site 300</i> at pages 1-1, 2-1, 2-2, 2-4, 2-5, 2-6, 2-8, and 2-9, and Tables 2.5-1, 2.5-2, 2.5-3, 2.5-4, and 2.4-1 (DOE July 2008).</li> </ul>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<p><u><i>DTSC Response</i></u></p> <p><b>Disputed.</b></p> <p><u>Objection:</u> Witnesses lack personal knowledge. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (<i>i.e.</i>, a complete characterization of the SSFL site); see State’s. SUF, ¶ 117.</p>
<p>108. The Pratt &amp; Whitney/UTC site is twice as large as SSFL and located 14 miles south of San Jose. It was formerly used for the manufacture and testing of rocket engines, including the development, manufacturing, and testing of solid propellant rocket motors and propellants. The site has many of the same contaminants as SSFL and has had higher historical concentrations of key contaminants, including TCE and perchlorate.</p>	<p><u><i>Boeing’s Evidence</i></u></p> <ul style="list-style-type: none"> <li>• Malinowski Dep. at [175:24] – [178:21] (“... Q. Are the principal contaminants of concern that are found at the United Technologies Corporation Pratt &amp; Whitney site higher than the concentrations of the similar contaminants found at SSFL? A. For those that I’m aware of, yes....”);</li> <li>• <i>Id.</i> (“Q. Can you think of any reason to apply a different cleanup process or different cleanup rules at the Pratt &amp; Whitney United Technologies site than at SSFL? A. No.”);</li> <li>• Bowers Decl. ¶¶ 32, 34, 48, 53, 54, 58, 65;</li> <li>• Ex. 1 to Bowers Decl., <i>Revised Human Health and Ecological Risk Assessment Work Plan</i> at 2-1, 4-24 (ARCADIS Aug. 2009);</li> <li>• Ex. 3 to Bowers Decl., <i>Closure Plan – Former Open Burning Facility</i> at 1-15 through 1-17 (ARCADIS June 2010);</li> </ul>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<ul style="list-style-type: none"> <li>Ex. 5 to Bowers Decl., Order No. R2-2004-0032 Revision to Final Site Cleanup Requirements; United Technologies Corporation at 2, 9 (California Regional Water Quality Control Board 2004).</li> </ul> <p><b><u>DTSC Response</u></b>  <b>Disputed.</b>  <u>Objection:</u> Witnesses lack personal knowledge foundation. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (<i>i.e.</i>, a complete characterization of the SSFL site); see State’s. SUF, ¶ 117.</p>
<p>109. SB 990 will result in a substantially more burdensome, time consuming, and expensive cleanup process than that required under generally applicable law, resulting in years of delay in the cleanup schedule, and the unnecessary expenditure of hundreds of millions of additional dollars, which will be allocated between Boeing and the federal</p>	<p><b><u>Boeing’s Evidence</u></b></p> <ul style="list-style-type: none"> <li>Whipple Decl. ¶¶22–31;</li> <li>Lenox Decl. ¶¶34–36;</li> <li>Bowers Decl. ¶¶71–76;</li> <li>Rutherford Decl. ¶¶48–51;</li> <li>Brausch Dep. [201:19] – [205:17];</li> <li>Rainey Dep. [38:23] – [39:24].</li> </ul> <p><b><u>DTSC Response</u></b>  <b>Disputed.</b>  <u>Objection:</u> Defendant objects to Statement of Fact # 109 in that what is “required under generally applicable law” is a conclusion of law. Defendant further objects that the witnesses lack personal knowledge of how much the cleanup will cost, as</p>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
<p>1 government.</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p>	<p>the characterization of the site has not been</p> <p>completed. <i>See</i> State’s. SUF, ¶ 117. Defendant</p> <p>further objects that the expert witnesses cited by</p> <p>Boeing lacked sufficient facts upon which to base</p> <p>their opinion about the cost of the cleanup because</p> <p>the characterization of the site is incomplete.</p>
<p>8 110. DTSC has made no</p> <p>9 attempt to determine</p> <p>10 whether any potential</p> <p>11 benefit SB 990’s cleanup</p> <p>12 procedures might have on</p> <p>13 public health and safety</p> <p>14 would outweigh the</p> <p>15 significant potential</p> <p>16 adverse consequences.</p>	<p>• <b>Not Disputed</b></p>
<p>17 111. SB 990 will require</p> <p>18 a substantial amount of</p> <p>19 additional soil to be</p> <p>20 removed from the site than</p> <p>21 under generally applicable</p> <p>22 law.</p> <p>23</p> <p>24</p> <p>25</p> <p>26</p> <p>27</p> <p>28</p>	<p><b><u>Boeing’s Evidence</u></b></p> <ul style="list-style-type: none"> <li>• Bowers Decl. ¶¶74–75;</li> <li>• Whipple Decl. ¶¶32–34;</li> <li>• Brausch Dep. [286:5] – [286:24];</li> <li>• Rainey Dep. [91:2] – [91:17];</li> <li>• <i>Id.</i> at [108:15] – [109:13].</li> </ul> <p><b><u>DTSC Response</u></b></p> <p><b>Disputed.</b></p> <p><b><u>Objection:</u></b> Defendant objects to Statement of Fact # 111 in that what is required under “generally applicable law” is a legal conclusion. Defendant further objects that the witnesses lack foundational</p>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	<p>personal knowledge of how much the cleanup will cost, as the characterization of the site has not been completed. <i>See</i> State’s SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of soil to be removed because the characterization of the site is incomplete.</p>
<p>112. Soil removal on a scale necessary to comply with SB 990 would require numerous additional dump-truck round trips through the community, greatly increasing the risk of traffic deaths and illness from pollution by diesel particulates.</p>	<p><b><u>Boeing’s Evidence</u></b></p> <ul style="list-style-type: none"> <li>• Whipple Decl. ¶¶32–34;</li> <li>• Bowers Decl. ¶¶77–80;</li> <li>• Brausch Dep. [293:15] – [294:17] (“Q. And am I correct that there is some risk to the public associated with additional trucking of soil from a site away from the site? A. Yes. ... Q. ... What is the nature of that risk? A. As I understand it, any time you have vehicular activity on a road, you have some measure of risk associated with accident rates and those sorts of risks that come to bear. Q. Also, diesel particulates? A. Sure. You have emissions from vehicles that travel on the roads.”);</li> <li>• Rainey Dep. [91:2] – [92:23]; [107:10] – [109:10].</li> </ul> <p><b><u>DTSC Response</u></b></p> <p><b>Disputed.</b></p> <p><b>Objection:</b> Defendant objects that the witnesses</p>

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	lack foundational personal knowledge of how much the cleanup will cost, as the characterization of the site has not been completed. <i>See</i> State’s SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of soil to be removed because the characterization of the site is incomplete.
113. The excavation activities required to comply with SB 990 would destroy considerably more of the existing ecological habitat at SSFL than would otherwise occur.	<p><b><u>Boeing’s Evidence</u></b></p> <ul style="list-style-type: none"> <li>• Bowers Decl. ¶¶74, 75.</li> </ul> <p><b><u>DTSC Response</u></b></p> <p><b>Disputed.</b></p> <p><b>Objection:</b> Defendant objects that the witnesses lack foundational personal knowledge to testify about the quantification of ecological habitat that will be affected by SB 990’s cleanup standard because it cannot be determined in the absence of a complete site characterization. <i>See</i> State’s SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of habitat that might be destroyed because the characterization of the site is incomplete.</p>
114. The method by which contamination is released into the environment at a	<ul style="list-style-type: none"> <li>• <b>Not Disputed</b></li> </ul>

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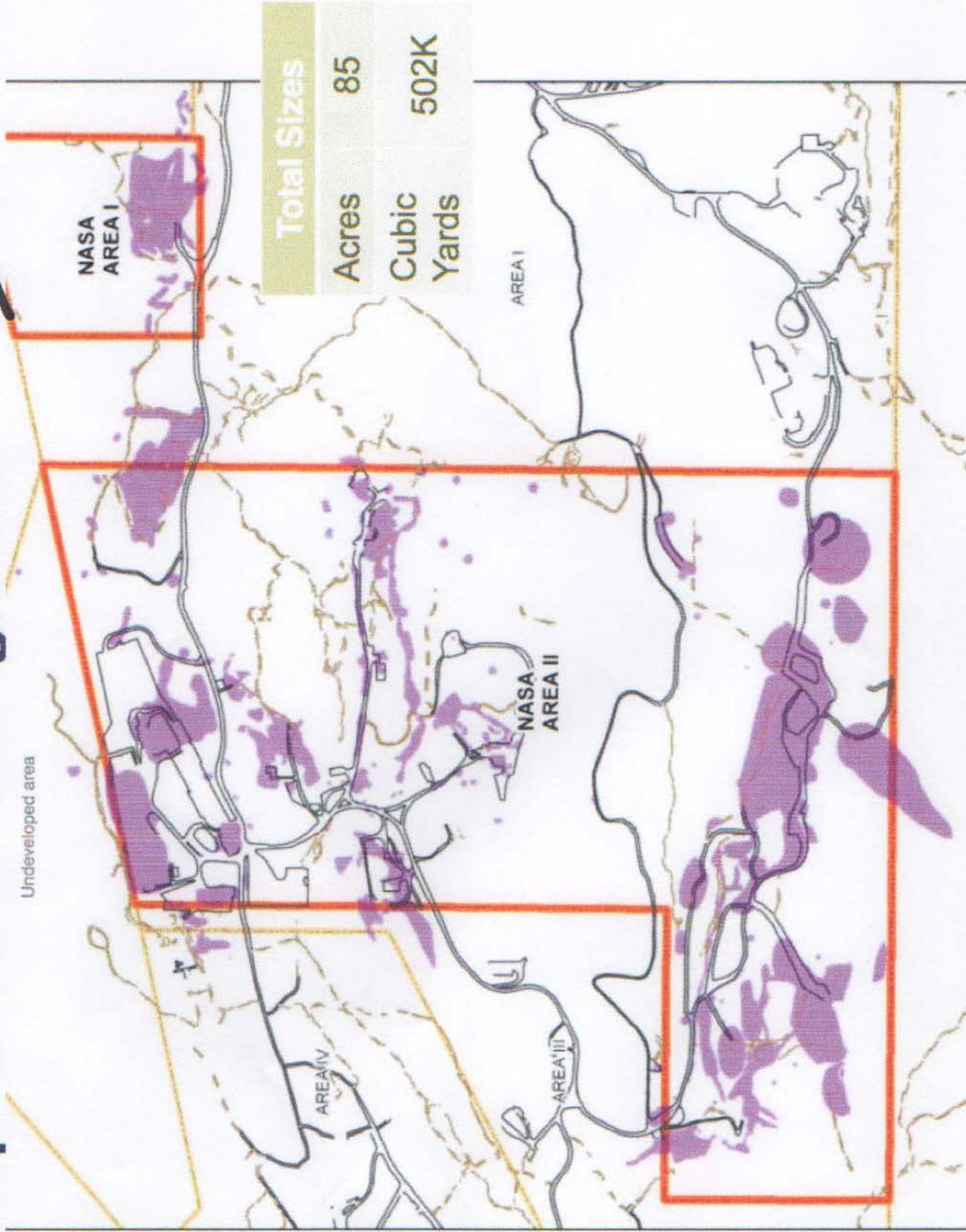
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Uncontroverted Fact	Boeing Evidence, DTSC Response
<p>particular site has no relevance to the appropriate future land- use assumption or the amount of residual contamination that can safely remain at that site at the end of the cleanup.</p>	

# Cleanup Areas for Background



**\$200 M!**

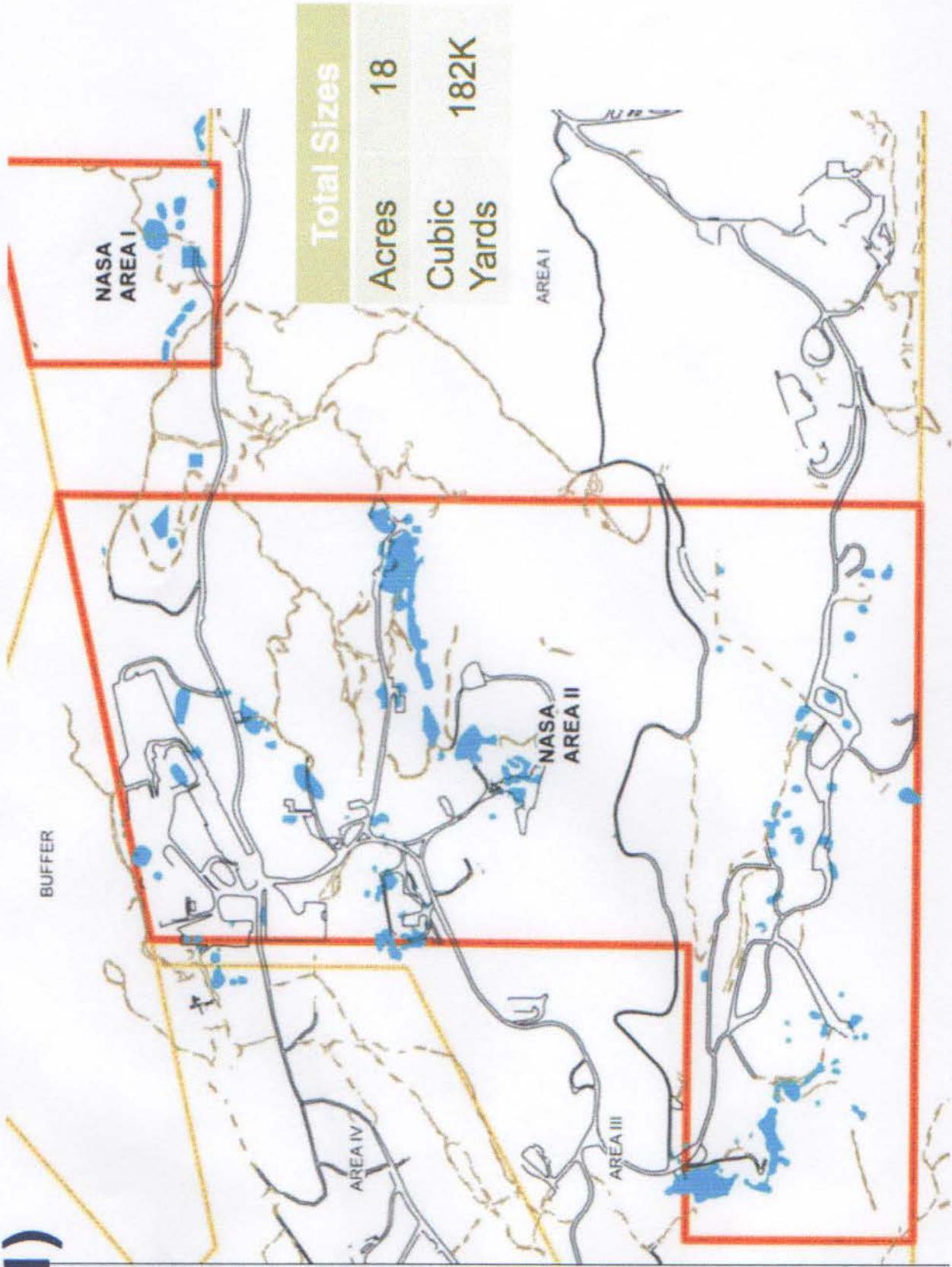




\$ 80 m

National Aeronautics and Space Administration

# Cleanup Areas for Suburban Residential (Alt 1)

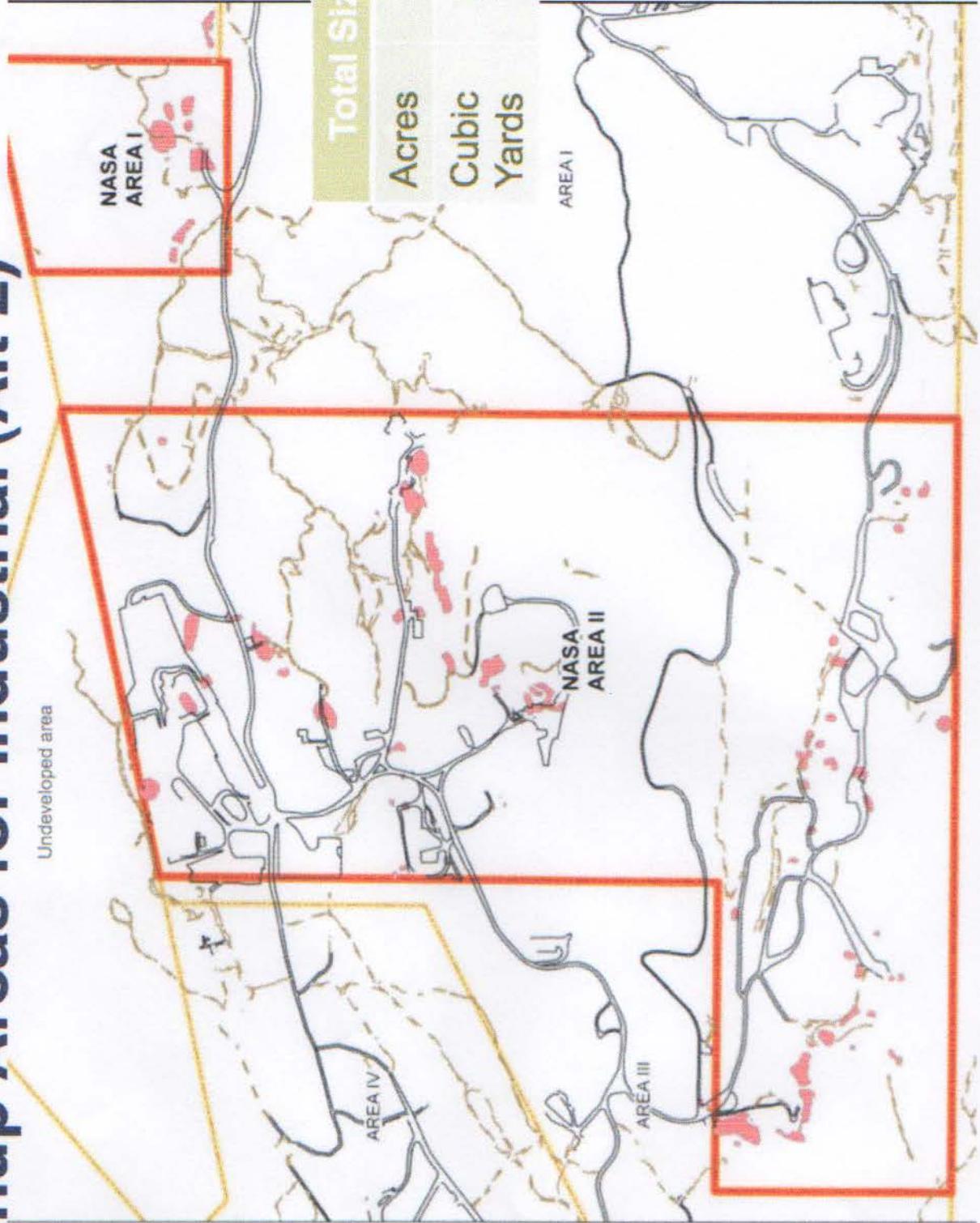




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National Aeronautics and Space Administration

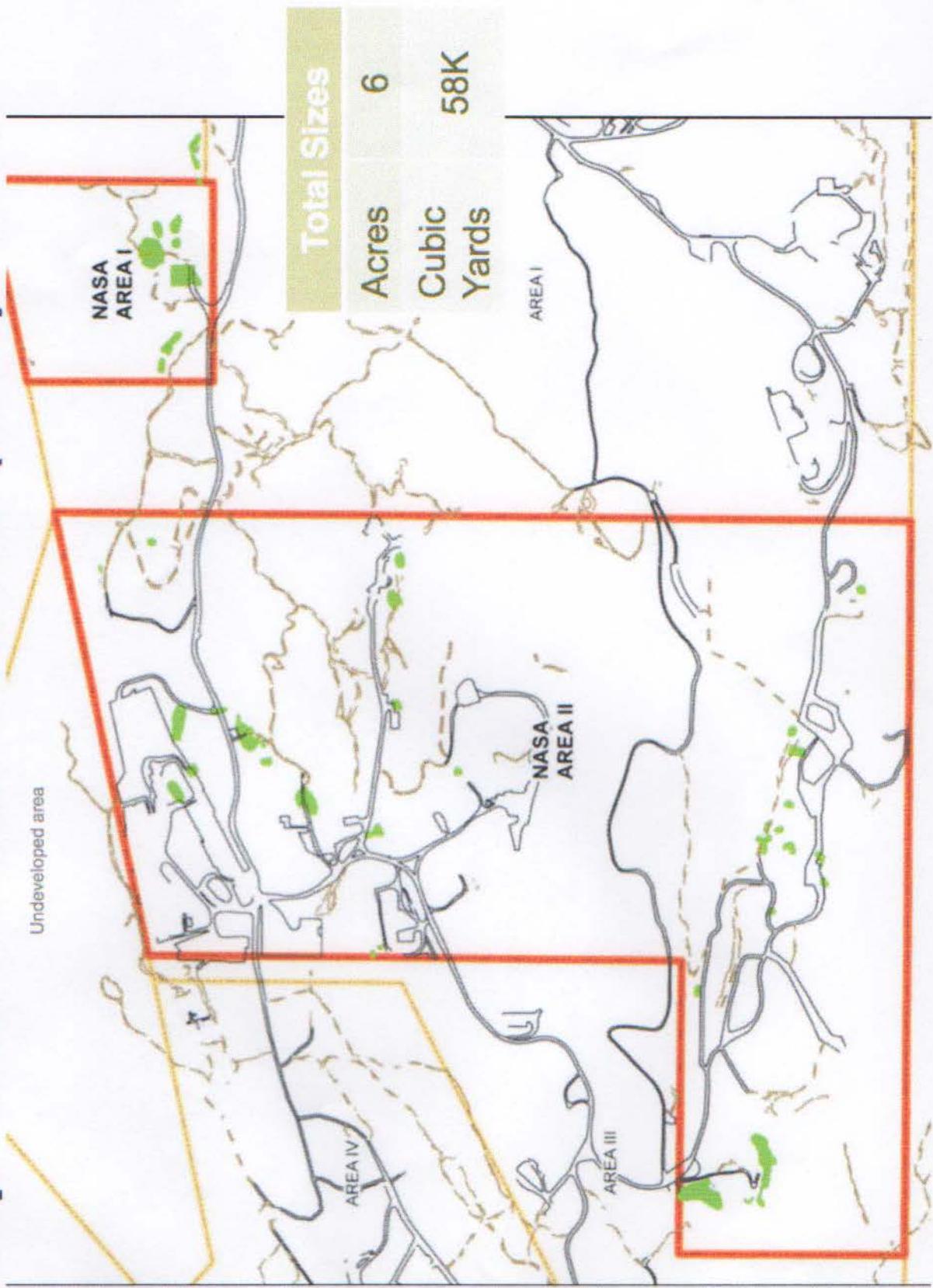
# Cleanup Areas for Industrial (Alt 2)





National Aeronautics and Space Administration

# Cleanup Area for Recreational (Alt 3) \$25m



cost. For example, the difference in making the site suitable for residential use versus achieving background levels is approximately \$133 million. DTSC officials told us they believe NASA’s cost estimate for achieving background levels is overstated, but NASA officials insist their estimates are based on the effort that would be required to meet the 2017 deadline and the exposure levels the DTSC previously required in the 2007 Consent Order.

**Table 2: Cleanup Levels and Associated Soil Removal and Cost Estimates**

Cleanup Level	Estimated Amount of Soil to be Removed (cubic yards)	NASA’s Estimated Cost
Background (required under AOC)	502,000	\$209 million
Residential	182,000	\$76 million
Industrial	92,000	\$37 million
Recreational (expected future land use for SSFL)	58,000	\$25 million
No Action	Not Applicable	Not Applicable

Source: NASA presentation to the community surrounding the SSFL.

**Interests of Outside Parties Played a Significant Role in NASA’s Cleanup Decision.**

Although the NASA Administrator ultimately agreed to the AOC, other NASA officials involved in discussions about the Santa Susana cleanup expressed reservations about the terms of the agreement, with one senior official writing “...be advised that I believe [the AOC] to be inappropriately written and executed and sign it with reservations.” According to NASA officials, input from members of Congress and local California leaders as well as advice from the CEQ played a significant role in the Agency’s decision to agree to the terms of the AOC and in its subsequent decision to exclude clean-up alternatives other than background levels from further consideration in the NEPA process.

NASA, Boeing, and DOE officials told us that political interest in the SSFL cleanup is rooted in a long history of community distrust about the Federal Government’s activities at the site, particularly the nuclear testing and research the Government conducted there in the 1950s. According to DOE officials, a partial meltdown of one of the nuclear reactors at DOE’s portion of the site in 1959 has been a longstanding focus of public attention and suspicion from anti-nuclear groups.<sup>26</sup> DTSC officials also cited community distrust as one of the reasons California has taken a particularly aggressive approach to the SSFL cleanup.

As part of the NEPA scoping process, NASA identified five possible alternatives for remediation of the soil at the SSFL site, including cleaning to residential and recreational use standards. However, NASA’s inclusion of the full range of possible clean-up alternatives caused concern among DTSC officials and California political leaders. The

<sup>26</sup> In fall 2012, the EPA released preliminary results showing lingering radiological contamination in the DOE-managed portion of the SSFL.

Table 1 shows the various cleanup or remediation levels possible for a site like the SSFL and the underlying assumptions associated with each level.

**Table 1: Definition of Cleanup Level**

Cleanup Level	Definition (Assumptions for Establishment of Exposure Limits)
Background	Returns the environment to its natural state prior to the introduction of contaminants.
Residential	Assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years without adverse health impacts.
Industrial	Assumes workers could remain on the remediated site for 8 to 10 hours per day, 250 days per year over a 25-year period without adverse health impacts.
Recreational	Assumes that an adult or child could be exposed several hours per day for about 50 days per year over a 30-year period without adverse health impacts.

Source: NASA SSFL Fact Sheet

**NASA Signed Consent Orders with State of California Governing Remediation at the SSFL.** NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed a Consent Order for Corrective Action with the DTSC under which the Agency committed to clean up groundwater and soil in the portions of the SSFL it administers to “residential” exposure levels. According to the Federal district court that heard Boeing’s legal challenge to SB 990, it is undisputed that cleanup to the residential level will fully protect human health and environment. Shortly after this Consent Order was signed, the California legislature enacted California Senate Bill (SB) 990, which imposes a stricter clean-up standard than the Consent Order.

In December 2010, NASA entered into another agreement with DTSC known as the Administrative Order of Consent for Remedial Action (AOC).<sup>16</sup> Under the terms of the AOC, NASA agreed that the 2007 Consent Order would continue to govern its cleanup obligations related to groundwater at Santa Susana (i.e., residential level), but the Agency would be required to clean the soil to the more stringent “background” level. NASA further agreed that soil cleanup at the site would be completed by 2017. According to a press release issued by the California EPA at the time, the AOC “meets the high bar set by Senate Bill 990 which requires the entire SSFL property to be cleaned up to stringent and protective standards, and places the cleanup of both chemical and radioactive contamination under the oversight of DTSC.”

<sup>16</sup> Under California state law, an Administrative Order of Consent is an agreement signed by the DTSC and an individual, business, or other entity through which the violator agrees to take the required corrective actions or to refrain from an activity.

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Wilmer Cutler Pickering Hale and Dorr LLP  
350 South Grand Avenue  
Los Angeles, California 90071

**UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA**

THE BOEING COMPANY,

Plaintiff,

v.

LEONARD ROBINSON, in his official  
capacity as the Acting Director of the  
California Department of Toxic  
Substances Control,

Defendant.

Case No. CV 10-04839-JFW (MANx)

**JUDGMENT PURSUANT TO FED.  
R. CIV. P. 54(b)**

The Court having granted Plaintiff The Boeing Company's Motion for Summary Judgment based on its determination that there were no genuine issues as to any material fact and that Plaintiff was entitled to judgment as a matter of law on Counts One, Two, and Three of the Amended Complaint, IT IS NOW, THEREFORE, HEREBY ORDERED, ADJUDGED, AND DECREED that judgment is entered in this action as follows:

1. Judgment is entered in favor of Plaintiff The Boeing Company as to Counts One, Two, and Three of the Amended Complaint.

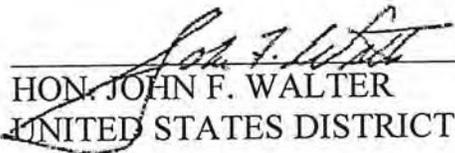
2. California Senate Bill 990 ("SB 990"), codified at Cal. Health & Safety Code § 25359.20, is declared invalid and unconstitutional in its entirety under the Supremacy Clause of the United States Constitution.

1           3. Defendant in his official capacity as Acting Director of the California  
2 Department of Toxic Substances Control (“DTSC”) and any successors, as well as  
3 any officers, agents, servants, employees, or attorneys acting for or on behalf of  
4 DTSC, or persons in active concert or participation with any such person or DTSC,  
5 are hereby enjoined from enforcing or implementing SB 990.

6           4. The Court finds that there is no just reason for delay of the entry of  
7 final judgment. In light of this finding, final judgment for Plaintiff is entered  
8 pursuant to Rule 54(b) as to Counts One, Two, and Three of the Amended  
9 Complaint. Counts Four through Nine of the Amended Complaint, which seek the  
10 same relief sought in Counts One, Two, and Three, are stayed pending further  
11 order of the Court.

12           The Clerk is ordered to enter this Judgment.

15 DATED: May 5, 2011

  
HON. JOHN F. WALTER  
UNITED STATES DISTRICT JUDGE

Wilmer Cutler Pickering Hale and Dorr LLP  
350 South Grand Avenue  
Los Angeles, California 90071

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FEBRUARY 14, 2013

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AUDIT REPORT

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OFFICE OF AUDITS

NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT  
THE SANTA SUSANA FIELD LABORATORY

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OFFICE OF INSPECTOR GENERAL

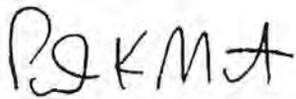
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National Aeronautics and  
Space Administration

Final report released by:



Paul K. Martin  
Inspector General

## Acronyms

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AOC	Administrative Order of Consent
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
DTSC	California Department of Toxic Substances Control
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EPA	Environmental Protection Agency
FY	Fiscal Year
GSA	General Services Administration
NEPA	National Environmental Policy Act
OIG	Office of Inspector General
RCRA	Resource Conservation and Recovery Act
SB	Senate Bill
SSFL	Santa Susana Field Laboratory
TCE	Trichloroethylene

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## OVERVIEW

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# NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY

## The Issue

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The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.<sup>1</sup> Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site.

NASA is responsible for administering 451.2 acres in two areas of the SSFL site, which includes 41.7 acres of Area I and all 409.5 acres of Area II. The Boeing Company (Boeing) owns and operates the remainder of the SSFL, and the DOE leased property in Area IV from Boeing. The Santa Susana site is home to at least 10 species of sensitive plants and at least 5 species of sensitive wildlife, as well as the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agencies conducted civilian nuclear research and energy development projects at the SSFL.<sup>2</sup> A partial meltdown at one of the nuclear facilities in 1959 led to a release of radioactive contaminants.

Although radioactive contamination remains a concern in the DOE portion of the SSFL, the primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid identified as a potential carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines, and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. While the Air Force was a large contributor to the TCE contamination, NASA – as the current administrator of the property – has assumed responsibility for the cleanup.

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<sup>1</sup> The area has become much less remote over time. More than 500,000 people currently live in southern Ventura County, California, where the SSFL is located.

<sup>2</sup> DOE's predecessor agency was the Atomic Energy Commission.

NASA, like all Federal agencies, is required to comply with laws and regulations that govern cleanup of contaminants left behind from Agency activities.<sup>3</sup> Generally, these laws require responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of those assessments. One of the principal factors considered in this type of assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard. The various clean-up levels potentially applicable to a site like the SSFL include background, residential, and recreational.<sup>4</sup>

Boeing has publicly stated that it intends to preserve its portion of the SSFL site – by far the largest section – for use as open space parkland upon completion of cleanup activities. Similarly, NASA officials told us that the anticipated future use of the NASA portion of the SSFL site is for recreation.

NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed consent orders with California’s Department of Toxic Substances Control (DTSC) agreeing to clean up groundwater and soil at the SSFL to residential exposure levels. Shortly thereafter, in October 2007, California Senate Bill No. 990 (SB 990) was enacted. SB 990 applies only to the SSFL and requires that the site be restored to either a “suburban residential” or a “rural residential (agricultural)” level, whichever will produce the lower permissible residual concentration for each contaminant. The legislation specifically prohibits the sale, lease, or other transfer of the property unless DTSC certifies that the land has undergone complete remediation.

In November 2009, Boeing filed a Federal lawsuit challenging SB 990 as violating the U.S. Constitution. In April 2011, a judge in the United States District Court for the Central District of California ruled in Boeing’s favor and declared the law unconstitutional. The State of California appealed that decision and oral arguments are expected before the U.S. Court of Appeals for the Ninth Circuit in early 2013.

In December 2010, NASA entered into a second agreement with the DTSC known as the Administrative Order of Consent for Remedial Action (AOC). Under the terms of the AOC, NASA agreed that the 2007 consent order would continue to govern its cleanup obligations related to groundwater at Santa Susana, but the Agency would be required to

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<sup>3</sup> The three primary environmental laws are the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347; the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et seq.; and the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §6901 et seq.

<sup>4</sup> Background level means returning the site to its natural state prior to the introduction of contaminants. Residential level assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years. Recreational level assumes that an adult or child could be exposed several hours a day for about 50 days per year over a 30-year period without adverse health effects.

return the soil to its original state before any testing activities occurred – referred to in the AOC as “background” levels. NASA further agreed that it would complete soil cleanup to this standard by 2017.

To comply with the 2010 Order, NASA budget requests include proposed funding increases of approximately \$30 million per year from fiscal years (FYs) 2014 through 2017 (an additional \$120 million total for the 4 years). NASA estimates that cleanup costs for Santa Susana to the AOC standard could cost at least \$200 million. In contrast, estimates to clean the site to a standard suitable for residential and recreational use are in the range of \$76 million and \$25 million, respectively. Santa Susana is not the only pending environmental remediation project at NASA. According to Agency environmental management officials, several other projects pose greater risks to human health and the environment than Santa Susana.

The AOC includes a provision for NASA to follow the National Environmental Policy Act (NEPA), which requires the Agency to complete an Environmental Impact Statement (EIS) for its cleanup activities at Santa Susana.<sup>5</sup> As part of this process, NASA initially identified five possible alternatives for remediation of the site, including cleaning to residential and recreational use standards. However, NASA’s inclusion of alternatives other than cleanup to background levels caused concern among DTSC officials and California political leaders.

In May 2012, DTSC sent a letter to the NASA Administrator to request that “NASA modify its...process to align itself with...a cleanup of the site to background levels...in compliance with the AOC” rather than evaluate less stringent cleanup alternatives. In addition, Senator Barbara Boxer from California asked the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies, whether NASA was legally required to consider cleanup options other than background level. After the CEQ advised the Senator that there was no such requirement, NASA limited its EIS process to consideration of only one cleanup standard – background levels.

Given the high cost of the SSFL cleanup and the unusual legal underpinnings of the AOC, we examined whether NASA’s plans to clean up environmental contamination at Santa Susana conform with the laws and standards that generally govern such remediation efforts and provide the best value to the taxpayer. Details of the audit’s scope and methodology are in Appendix A.

## Results

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NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected

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<sup>5</sup> An EIS is a detailed evaluation of the Agency’s proposed action and possible alternatives. The public, other Federal agencies, and outside parties may provide input into development of an EIS and are afforded an opportunity to comment on the resulting draft EIS.

future use of the site. Moreover, the cleanup is likely to cost the taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level itself that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that cleaning the SSFL to background levels could cost more than \$200 million, or more than twice the cost to clean it to residential levels and more than eight times the cost to clean it to a recreational use standard. In addition, because cleanup to background levels may require highly invasive soil removal, there is a risk that such a cleanup would result in significant damage to the surrounding environment and to archeological, historical, and natural resources at the site.

## Management Action

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We recommend that the Administrator, with the assistance of the Associate Administrator for Mission Support, reexamine the Agency’s current plans for cleaning the NASA-administered portion of the Santa Susana site and ensure that its environmental remediation is conducted in the most cost-effective manner in keeping with the expected future use of the property.

In accordance with our usual practice, we provided NASA with a draft of this report and requested the Agency respond to our recommendation. Typically, the Agency indicates whether it concurs with our recommendation and describes any corrective actions it plans to undertake to meet the intent of the recommendation. However, in this case NASA declined to indicate whether it agreed or disagreed with our recommendation.

Rather, after noting that NASA “fully appreciates” our recommendation, the Associate Administrator stated that the Agency will continue to work with the DTSC and local community stakeholders “within the requirements” of the AOC and at the same time will “make every effort to implement a [cleanup] program that will achieve both cost avoidance and protection of cultural and natural resources.” In addition, the Associate Administrator noted several recent developments that may affect how the AOC is interpreted and implemented. (See Appendix F for Management’s Response).

Although we are encouraged by NASA’s pledge to work toward a cleanup that achieves cost avoidance and preserves cultural and natural resources, it is not clear that the Agency can achieve the most appropriate and cost-effective remediation effort given the constraints of the current AOC. Accordingly, our recommendation remains unresolved and we will continue to monitor the Agency’s efforts to clean the Santa Susana site.

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## **NASA COMMITTED TO AN EXCESSIVE AND UNNECESSARILY COSTLY CLEANUP**

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NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected future use of the site. Moreover, the cleanup is likely to cost taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that the cost to clean the soil to background levels could exceed more than \$200 million. This is more than twice the cost to clean the site to residential levels and more than eight times the approximately \$25 million NASA estimates it would cost to clean the site to a recreational use standard.<sup>25</sup> In addition, because cleanup to background levels may require highly invasive soil removal, there is a greater risk that such a cleanup may result in significant damage to the surrounding environment as well as to archeological, historical, and natural resources at the site.

**NASA's Remediation Plan Commits the Agency to a Cleanup Standard Not Based on Risk to Health.** Environmental cleanup standards generally are set after measuring the risks to human health in light of the expected future use of the property. While Boeing is cleaning its portion of the SSFL site – by far the largest section – to residential cleanup standards, it has publicly stated that it intends to preserve the site for use as open space parkland upon completion of its cleanup activities. Although final disposition of the NASA-administered portions of the SSFL lies with the GSA, NASA officials said they also expect the Agency's portion will ultimately be used for recreation. According to NASA, DOE, and EPA officials and in light of this expected land use, a normal NEPA process – where the full range of alternatives would be identified and evaluated prior to deciding on the course of action – would likely have led to a decision to clean the area to a less stringent standard than background levels. Although California officials have not yet established the specific criteria necessary for NASA to achieve background levels for the various contaminants at the site, these levels are expected to approximate the natural concentrations that would have been found in the soil prior to any rocket testing activities.

**Less Costly Cleanup Alternatives Exist.** NASA estimates potential costs of more than \$200 million to clean its portion of the SSFL site to background levels to meet the terms of the AOC. This compares to \$76 million to make the site appropriate for residential use and \$25 million for recreational use. As shown in Table 2, the possible scenarios for NASA's remediation efforts at the SSFL site vary considerably in effort required and in

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<sup>25</sup> The estimates above are for the soil cleanup at SSFL based on the 2010 AOC. They do not include the cost of groundwater cleanup, which is still governed by the 2007 agreement.



## Santa Susana Mountain Park Association

*Dedicated to the Preservation of the Simi Hills and Santa Susana Mountains*

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[ssmpa.com](http://ssmpa.com)

September 28, 2013

Mr. Allen Elliott  
SSFL Project Director  
NASA MSFC AS0, Building 4494  
Huntsville, AL 35812

**Comments of Santa Susana Mountain Park Association on  
Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for  
the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County,  
California, dated July 2013**

### SUMMARY:

NASA's DEIS does not serve its purpose, which is to completely inform decision makers so they can decide how to best execute the cleanup. The DEIS is flawed because it lacks important information. DTSC must supply much of the missing information. The DEIS is so inadequate it should be re-issued after critical missing information is made available or determined.

1. The DEIS lacks guidance on situations and actions that depend on vague language in the 2010 Administrative Order on Consent (AOC) that governs the cleanup. DTSC must provide NASA with an authoritative and binding interpretation of the language of the AOC.

The DEIS is incomplete because it lacks guidance that still-undelivered DTSC documents, such as the DTSC EIR should include. This future EIR document must include a CEQA analysis that balances cleanup goals under various scenarios, including costs (both financial and environmental). Additionally, the DTSC EIR must provide information on what soils are to be removed in culturally sensitive areas, and what cultural resources will remain after the cleanup, as DTSC has sole authority to make these decisions under the AOC.

2. The DEIS is incomplete because it does not specify expected outcomes for cultural resources, both archeological and architectural.
3. The DEIS is incomplete because it excludes analysis of all possible levels of cleanup except the "cleanup to background" alternative. Many commentators specifically requested inclusion of other reasonable alternatives during the scoping process.
4. The DEIS is incomplete because it does not address how to obtain replacement soil that will meet the requirements in the AOC.
5. The DEIS is incomplete in its specification of cumulative impacts with other concurrent projects; viz., the DOE and Boeing cleanups.

6. The DEIS is incomplete in its survey and mitigation methods for plants.

**ESSENTIAL POINT OF SSMPA's COMMENTARY:**

**NASA must acquire from DTSC important missing information, and NASA must issue a corrected, comprehensive DEIS that provides decision makers adequate information to make an informed decision on how the cleanup should proceed.**

**COMMENTS:**

**1 DEIS Lacks Guidance on AOC Language and on Site-Specific Guidelines**

- 1a.** The AOC charged DTSC with oversight authority for the cleanup.<sup>1a</sup> DTSC must provide NASA with a binding, authoritative interpretation of the language of the AOC. NASA must learn what SSFL-situation-specific rules will govern decisions and actions for the cleanup.
- 1b.** DTSC must provide NASA with much information that a DTSC EIR-type document would contain.
- 1c.** DTSC must provide guidance to NASA on many subject areas before NASA can complete its DEIS. Of major consequence for every decision is the requirement under the AOC that at least 95% of any soil that has ANY amount of contamination over background level must be removed.<sup>1c</sup> This ambiguous requirement has pervasive impact on every item discussed below.
- 1d.** DTSC does not expect to deliver its EIR until some unspecified time in the future.<sup>1d</sup> NASA needs information from such EIR to complete a valid EIS that can be used as a decision making guide. Does this lack of a realistic schedule not call into question the feasibility of the AOC-mandated completion date of 2017? Can the governing AOC therefore any longer be considered 'binding'?
- 1e.** The NASA Associate Administrator for Mission Support Directorate notes that NASA will be assisting DTSC in a CEQA analysis estimated to be complete by the end of 2015, but also notes that analysis will be restricted to the AOC cleanup level.<sup>1e.1</sup> (See **Attachment 1**.) To the best of our knowledge, both NEPA and CEQA set standards for environmental considerations that must be addressed in environmental documents, and contracts that are inconsistent with that law do not trump NEPA and CEQA provisions. The NEPA and CEQA analysis must consider all options, not the single path set by the AOC<sup>1e.2</sup> When will DTSC's actual EIR, including CEQA considerations, be issued as a draft? When will it be issued in final form? It appears these documents are not scheduled before execution of the cleanup to the constraints of the AOC. That is not our understanding of CEQA or environmental policy.

- 1f.** There are many environmental cleanup projects in the U.S. They "all" (as far as anyone knows) MUST operate according to federal and state EPA laws that were passed by legislators concerned with the environment. Operating under EPA processes means any toxic cleanup MUST evaluate multiple reasonable alternatives. The SSFL cleanup was forced to be uniquely different from other projects, because the AOC was signed before any EIS-type document. Why the difference? <sup>1f</sup> See **Attachment 2**. How is the different treatment of this project explained? We can fathom no reasonable explanation.

SSMPA advocates a cleanup based on scientific results, testing and standards, not political pressures.

- 1g.** NASA should include the AOC document as an Appendix to the DEIS.
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## **2 DEIS Does Not Specify Expected Outcomes for Cultural Resources**

- 2a.** DTSC must interpret the AOC on the handling of Native American cultural resources. The AOC language is vague in its definition of Archaeology, defining it as "Artifacts." They must be "formally recognized as Cultural Resources".<sup>2a</sup> What does a "formally recognized cultural resource" mean? Who needs to recognize what to meet that odd definition? Interpretive guidance is critically needed, because much of the Burro Flats Cave area, registered in the National Register of Historic Places, is on the NASA property. The future of Burro Flats and related nearby Native American areas is yet to be decided by DTSC. An artifact is generally understood to represent a movable, historically used, significant object. Given that definition, the Burro Flats Cave itself could be eliminated by the language in the AOC, as well as bedrock mortars that are very significant in the immediate area. An explanation of how the Burro Flats Cave, and nearby related sites, will be treated must be provided by NASA and DTSC in the DEIS.

- 2b.** The DEIS states that cleanup of approximately 0.65 acres of the Burro Flats site (CA-VEN-1072) will be undertaken.<sup>2b</sup> At the August 28 public comment session on this DEIS, a NASA representative indicated they have been told the Cultural Resource definition in the AOC means the National Register of Historic Places (only). Under that definition, this site is exempt from cleanup. Why would this DEIS indicate any portion of this site is to be cleaned? This discrepancy highlights the problem of who controls the cleanup, an ongoing issue as we reviewed the DEIS. We do note, however, the definition of Artifact still was not clarified so the Burro Flats site may still be subject to cleanup under the AOC; since this site may still be subject to cleanup due to vague language, we object to cleanup of the Burro Flats site, as it is an identified and registered National Register of Historic Places area, and as it is an identified Indian Sacred Site.

What are the contamination levels at the archaeological sites, and in particular, the 0.65 acre Burro Flats parcel slated for cleanup?

- 2c.** The DEIS does not provide any information on how the boundaries of the archaeological sites on the property were determined. What survey methods were used? When was that done? What was found on the site? How was it tested? At what depth? What will DTSC do with an artifact NASA found in that survey, or a midden area that would not qualify as an artifact (that surely would be "contaminated")?

- 2d.** Only a pedestrian survey of the site boundaries was done. Are additional pedestrian studies, and more detailed studies needed in the area where soil is to be removed? The DEIR lacks sufficient specificity to understand what has been surveyed.<sup>2d</sup> A more comprehensive survey using soil sampling techniques must be undertaken to determine the true size of the District. The Burro Flats Archaeological District extends outside the borders of Area II into Area III and possibly into Area IV. This site should not be segmented between the 3 RPs, but should be looked at holistically as part of the entirety of the Cultural Resources of SSFL. New, detailed surveys of this site must be accomplished prior to making irrecoverable decisions to “clean up” this exceptional and irreplaceable Indian Sacred Site.

An additional boundary dilemma with the Burro Flats site and the National Register of Historic Places (NRHP) is that as of 1972, the NRHP site is 25 acres. Since the DEIS recognizes only 17 acres as the site, where are the boundary differences? Does the NRHP boundary exclude or include the 0.65 acres that is to be cleaned up? What is protected under the NRHP, and what should be protected as part of VEN-1072?

The steps in 2b, 2c, and 2d are all necessary to define the Burro Flats site. Again we see the same problem – DTSC must advise what can be excluded from the cleanup. NASA must provide information on what they will exclude, given an updated DTSC interpretation. And here, on the single site that is already NRHP certified, the boundaries must be established, and the site still needs a detailed evaluation by a qualified archaeologist, and careful and limited testing must be done to provide information on contamination of any part of the site. The approach that DTSC and NASA will take to an Indian Sacred Site must be incorporated in the decision. All this information needs to be provided and presented, with proposed resolutions, in a re-issued DEIS.

- 2e.** What will be done with newly discovered archaeological Artifacts found in the process of the cleanup, that are not “culturally recognized”? How will these items be preserved or protected?
- 2f.** The Appendix for Cultural Resources<sup>2f</sup> lists multiple sites within a mile of the NASA property that have Cultural Resources We have heard that multiple additional sites have been identified during recent surveys on nearby SSFL properties. It appears the list in the Appendix at Table 4 has not been updated to reflect current information. The segmented nature of the various studies is of concern. Please review and update as needed.
- 2g.** DTSC must interpret the AOC on the handling of Architectural Structures that are eligible historic structures (rocket engine testing facilities). Three structures at each of the Alpha, Bravo and Coca test stand areas have been found eligible under NRHP and SHPO (nine total structures).<sup>2g</sup> What contamination has been found in the soils under the test stands? Have testing boreholes been drilled under these structures? What has been found? Appendix C, Figure 8 at page C-53, shows significant contamination in the Test Stand Areas, but does not disclose information specific to the key structures. The DEIR is deficient in not disclosing specific information on contamination issues in these areas, and particularly in the foundation areas of the NRHP and SHPO-eligible structures.
- 2h.** Will DTSC allow some or all of these historic structures to remain?

- 2i. Since test stands are not “artifacts”, but are recognized as significant historic structures under Section 106, NRHP and SHPO, what will happen to these structures?
- 2j. The standards established by Section 106 (reproduced below) provide a mandate to seek ways to avoid or mitigate adverse effects on historic properties. Both NASA and DTSC need to indicate their intention for these structures that could be irreparably destroyed and a key part of our country’s rocket history forever thereby lost. Because the NASA property holds key remnants of our country’s space and rocket development, consideration of the possible end use of the property as a park should be incorporated in the preservation decisions. If the NASA parcel ultimately is joined with the larger Boeing parcel that is expected to become a park, preservation of appropriate NRHP and SHPO-eligible structures to inspire future generations should be given a much higher priority. These decisions should be documented in Alternatives presented in the re-issued DEIS.

Appendix C, Section 5.1 is reproduced in part below (emphasis added):

“The enabling legislation for Section 106 is contained in 36 CFR 800, “Protection of Historic Properties.” The Section 106 process entails three basic steps:

1. Identify historic properties potentially affected by the undertaking.
2. Assess adverse effects on historic properties.
3. Seek ways to avoid, minimize, or mitigate adverse effects on historic properties.”

- 2k. Prepare and present a cost/benefit analysis for preserving and maintaining the historic structures and Districts. Include contamination analysis (soil and building), as well as costs and benefits identified in the study, to make informed decisions about which to preserve, and which can be preserved and be safe for visitors. We encourage special attention to Coca V and Alfa III and their associated blockhouses, as those were targeted early as preferred candidates for preservation, if preservation choices ultimately are necessary.
- 2l. With respect to all cultural resources, please provide information for the groundwater and surface water effects due to soil mitigation. Specifically include consideration of the effect of the 330,000 cubic yard reduction in site soils noted in the soil replacement plan, including collateral re-contamination and other effects from flooding and silt runoff due to soil changes.

The impacts anticipated to the archaeological cultural resources from removal of soil from parcels within the designated archaeological site have not been reviewed or disclosed in the DEIS.

The impacts anticipated to the archaeological cultural resources from removal of soil from parcels outside of the designated archaeological site, but within the NASA DEIS study area have not been reviewed or disclosed in the DEIS.

Nothing is disclosed relative to the Burro Flats cave except that soil is to be removed from 0.65 acres – from where?

The impacts anticipated to the historic test stands (Alpha, Bravo, Coca) from removal of soil from parcels within the designated historic area have not been reviewed or disclosed in the DEIS.

The impacts anticipated to the historic test stands (Alpha, Bravo, Coca) from removal of soil from parcels outside of the designated historic area, but within the NASA DEIS study area, have not been reviewed or disclosed in the DEIS.

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### 3 DEIS Excludes Consideration of Alternative Cleanup Levels

- 3a.** Exclusion of any possible cleanup alternatives, except one, is a momentous detriment to the usefulness of the DEIS. The DEIS excludes from consideration reasonable alternatives supported by authorized standards of the State of California including cleanup to Suburban Residential, Commercial/Industrial, and Recreational levels.
- 3b.** The DEIS should be expanded to include those excluded alternatives, presenting comparison of costs and all related effects on transportation, biological resources, cultural resources, soil, water, and air.
- 3c.** We include as **Attachment 3** charts NASA presented at past public meetings. The charts show estimates for cost and materials that could be expected for Background, Suburban Residential, Industrial, and Recreation level cleanup alternatives. Presented just behind these charts, is a summary of the anticipated costs for each type of cleanup and a chart summarizing the meaning of each cleanup standard.<sup>3c</sup> These charts and related commentary on cleanup standards and costs should be included in the re-issued DEIS.
- 3d.** A discussion of alternatives should include what NASA will do if the Appeals Court supports the lower court decision, which will have the effect of stating that special, stricter cleanup standards are not required at SSFL under California law. An explanation should be provided to explain why the public should pay for a cleanup that is inconsistent with the law, and why local residents should be subjected to significant environmental contaminants from emissions, disturbed soil and related fugitive dust effects, and surface water runoffs that are greatly increased by unavoidable consequences of a background level cleanup of the site. See, in **Attachment 4**, the text of the District Court decision filed May 5, 2011, which prohibits DTSC from compelling compliance with SB990. The AOC appears to operate as a substitute for a questionable law, but the justification for its position requiring a “background level cleanup” on this important site is very unclear.
- 3e.** The February 2013 Report of the Inspector General of NASA brought up many similar questions.<sup>3e.1</sup> The report requested that the level of cleanup be re-evaluated. The Inspector General also questioned whether NASA would receive funding allocations within its own budget to perform the cleanup to the draconian<sup>3e.2</sup> standards required by the AOC. How will this be resolved? Will NASA be provided sufficient funding for cleanup to this background standard, even if the cleanup to SB990-type levels is again held unlawful by the Appeals Court? See **Attachment 5**, “NASA Inspector General Overview February 14, 2013”.
- 

### 4 DEIS Is Not Complete Regarding Basic Soil Considerations

- 4a.** The DEIS does not fully address how appropriate backfill soil will be sourced. Some

possible suppliers are noted, but there is no guidance on how soils that must match the specific background levels for SSFL will be identified. Source sites from which sufficient quantities of such soils may be obtained are not identified.<sup>4a</sup>

- 4b. The DEIS does not explain why or how three times as much soil will be removed from the site as will be backfilled. Can permanent reduction (by non-backfilled removal) of up to 333,000 cubic yards of soil be deemed appropriate mitigation? <sup>4b</sup>
- 4c. The site, apparently to be reconstituted with up 333,000 cubic yards less soil, will have significant effects on surface water runoff. A major problem on the SSFL site has been surface water runoff and related contamination effects. Although the site has had a better record in the last two years, rainfall levels have been very low. Surface water runoff effects resulting from substantial reduction in surface soils must be reviewed, explained, and disclosed. It is well settled that a reduction in permeable surfaces (typically associated with development) causes significantly increased runoffs. What will be the runoff effects of the decreased soil in a year with average rainfall? What is expected when rainfall is significantly over average levels?
- 4d. The EIS states “onsite” (*ex situ* and *in situ* treatment) soil cleanup may be performed where appropriate.<sup>4d.1</sup> The AOC seems to prohibit this promising alternative and states the only allowable method for soil cleanup is removal.<sup>4d.2</sup> DTSC and NASA must both explain how this seeming contradiction is possible based on the AOC language. The “leave in place” remediation alternative should be considered in the NEPA and CEQA analysis, as well as in the DEIS, because such a remediation approach would entail significantly less environmental impact, by reducing soil excavation, hauling, and soil replacement.
- 4e. The DEIS includes a review of Environmental Justice which generally looks at the impacts to lower income and minority populations that will be affected by the hauling. Nothing is presented to address such demographics in the areas that are proposed to receive, and then permanently live with possible effects from the contaminated material, such as Buttonwillow, Kettleman, and Beatty. The Environmental Justice analysis should be extended in the re-issued DEIS to include these areas.
- 4f. At the August 28, 2013, public comment session on the DEIS, it was disclosed the haul trucks are merely covered with tarps when traveling with contaminated material. We request much more complete protection for our community from the contaminated material that the AOC’s require to be removed. Better alternatives for reduced dust from the trucks need to be developed and implemented.

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## 5 DEIS Is Not Complete Regarding Cumulative and Combined Impacts

- 5a. The combined impacts of all concurrently operating SSFL projects regarding traffic and transportation-related pollution are non-specific: (e.g., “...likely would be noticeable ...”).<sup>5a</sup>

- 5b. What transportation routes will the other related projects (concurrent DOE, Boeing cleanups) use. Will they use the same or different haul routes?
- 5c. What will the transportation emissions be for all projects combined? What will be the total effect on surrounding communities?
- 5d. The number of trucks on all projects, travelling on Woolsey Canyon during daylight hours must be disclosed, as well as twilight and night truck traffic volumes for all projects combined. This disclosure should be presented in a table format, and specify the anticipated number of incoming and outgoing trucks in one hour increments during weekdays and weekends (if applicable), for all projects to present a realistic understanding of the traffic impact. Include a column for worker arrivals and departures from the site. Provide hour of the day in the rows, and in columns show incoming and outgoing traffic for each of NASA, DOE, Boeing. Combine all workers for all projects in the last set of columns for cumulative incoming and outgoing traffic.
- 

## 6 DEIS Is Not Complete Regarding Plants

- 6a. The DEIS survey and analysis of flora are insufficient. They lack quantification and specifics related to impacts.
- 6b. How many plants of each type are involved? How many coast live oak (*quercus agrifolia*) trees will be removed or otherwise endangered? How many western sycamores? Although counts for Santa Susana tarplants are shown, presentation of plant density and expected soil removals (similar to Appendix C, Figure 8 at page C-53) would greatly improve the understanding of the effect of the project on this State-listed Rare species.
- 6c. What steps will NASA take, over what period of time, to regenerate sensitive species? For example, we do not believe Santa Susana tarplant is part of the seed mix specified for replanting. How will plantings be monitored to encourage regrowth?
- 6d. What steps will NASA take to eliminate introduction of invasive species as off-site soil is brought in as part of the soil replacement? How will plants be affected by re-filling the site with only one-third as much soil as was removed? How will the segmented cleanup and backfills affect the overall health of this habitat, which in many areas is uniquely unaffected by the major metropolitan community next door?
- 

## CONCLUSION AND CLOSING COMMENTS:

We believe the preceding comments taken as a whole make it clear the DEIS as issued is incomplete, inadequate, and does not conform to key environmental laws such as NEPA and CEQA. Lack of input from DTSC, for virtually every decision affecting cultural resources and key soil removal approaches, thwarts the DEIS from fulfilling its purpose as a guide to responsible decision-making.

Additionally, it is dangerous to adhere to the 2017 completion date for cleanup that the AOC arbitrarily mandates. A hurried cleanup will likely become an irrevocable mistake, due to significant negative impacts to soil and cultural resources that may occur. The DEIS must be re-issued after DTSC and NASA determine and agree to robust decision-enabling guidelines, and the DEIS must evaluate multiple reasonable alternatives.

Finally, the target date for completion of the cleanup must be extended. The current target date of 2017 has become unrealistic. A revised target date of 2020 will permit meaningful evaluation, compliant with NEPA and CEQA processes, of multiple, reasonable cleanup alternatives and their impacts. An orderly and logical cleanup can then be executed responsibly, thereby avoiding unwarranted destruction of irreplaceable cultural and natural resources.

SSMPA looks forward to seeing responses to our comments in upcoming environmental documents and asks that you seriously consider them. We primarily represent Chatsworth and West Hills, two areas that will be most affected by the thousands of truckloads of materials that are required to be moved by the AOC. In a manner similar to that voiced so clearly by the NASA Inspector General<sup>7</sup>, we too, have great difficulty seeing that cleanup to these special AOC standards is of any tangible benefit. (See **Attachment 6.**) But we certainly see the detriment to our community and the huge governmental costs we will pay as taxpayers.

Please be assured that we resolutely support cleanup of this site to “reasonable” levels. We believe the “Suburban Residential” cleanup standard, set by the 2007 Consent Orders, is a very reasonable cleanup level (exceeding requirements) if the land will become open space, as almost all who are familiar with the property request.

Sincerely,



Teena A. Takata  
President, Santa Susana Mountain Park Association  
P. O. Box 4831  
Chatsworth, CA 91313-4831

**About Santa Susana Mountain Park Association:**

Santa Susana Mountain Park Association is a 41 year-old non-profit organization based in Chatsworth, Los Angeles, California.

We represent approximately 700 members and concerned citizens, and we partner with many organizations to promote ecological and recreational quality in Southern California.

**SSMPA's mission is to preserve and protect the Simi Hills, Santa Susana Mountains, and surrounding open space.**

SSMPA Board of Directors:

Teena Takata, John Luker, Vanessa Watters, Diana Dixon-Davis, Bob Dager, Carla Bollinger, Warren Stone, Donna Nachtrab, Tom Nachtrab

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- Attachment 1, (1e)      Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 33  
<http://oig.nasa.gov/audits/reports/FY13/IG-13-007.pdf>  
retrieved 8/20/2013
- Attachment 2, (1f)      U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 46-56  
[http://www.dtsc-ssfl.com/files/lib\\_boeinglawsuit%5Clegaldocs/64849\\_Boeing\\_statement\\_uncontroverted\\_facts.pdf](http://www.dtsc-ssfl.com/files/lib_boeinglawsuit%5Clegaldocs/64849_Boeing_statement_uncontroverted_facts.pdf)  
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- Attachment 3, (3c)      Three Documents:  
                                Cleanup NASA Alternatives (4 pages)  
                                NASA Cleanup and Related Costs (Table), p. 11  
                                NASA Remediation Levels Defined (Table), p. 6
- Attachment 4, (3d)      U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Judgment Pursuant to Fed. R. CIV. p. 54(b)
- Attachment 5, (3e)      Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, overview, p. i– iv
- Attachment 6, (7)      Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 10

## References:

- 1a** Docket No. HSA-CO 10/11 - 038 ADMINISTRATIVE ORDER ON CONSENT FOR REMEDIAL ACTION, section 5.19.1, [http://ssfl.msfc.nasa.gov/documents/governance/NA\\_DTSC\\_Final\\_AOC\\_Dec\\_2010.pdf](http://ssfl.msfc.nasa.gov/documents/governance/NA_DTSC_Final_AOC_Dec_2010.pdf) retrieved 8/20/2013
- 1c** Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 1 [http://ssfl.msfc.nasa.gov/documents/governance/NASA\\_DTSC\\_Final\\_AOC\\_Dec\\_2010.pdf](http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf) retrieved 8/20/2013
- 1d** NASA DEIS, 1.3 Scope of the Analysis, p. 1-7
- 1e.1** Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 33 <http://oig.nasa.gov/audits/reports/FY13/IG-13-007.pdf> retrieved 8/20/2013
- 1e.2** U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 36-37 [http://www.dtsc-ssfl.com/files/lib\\_boeinglawsuit%5Clegaldocs/64849\\_Boeing\\_statement\\_uncontroverted\\_facts.pdf](http://www.dtsc-ssfl.com/files/lib_boeinglawsuit%5Clegaldocs/64849_Boeing_statement_uncontroverted_facts.pdf) retrieved 8/20/2013
- 1f** U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 36-37
- 2a** Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 1
- 2b** NASA DEIS, 4.3.1.2 Soil Cleanup to Background, p. 4-19
- 2d** NASA DEIS, Appendix C, Draft Cultural Resources Study... 3.2 Field Inventory Methodologies, p. C-34; 6.1.1 Archaeological Resources, p. C-51; Figure 8 Proposed Soil Remediation Area..., p. C-53
- 2f** NASA DEIS, Appendix C, Draft Cultural Resources Study..., 3.1 Archival Research, p. C-31-33
- 2g** NASA DEIS, Appendix C, Draft Cultural Resources Study, 3.3.2 Historic Architectural Resources, p. C-38-39
- 3c** Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 6
- 3e.1** Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, Overview, p. iii-iv
- 3e.2** (of laws or their application) excessively harsh and severe [http://oxforddictionaries.com/us/definition/american\\_english/draconian](http://oxforddictionaries.com/us/definition/american_english/draconian)
- 4a** NASA DEIS, 2.2.2.3 Soil Cleanup Technologies, p. 2-19
- 4b** NASA DEIS, Table 2.2-5, Estimated Total Soil Volumes..., p. 2-19
- 4d.1** NASA DEIS, 4.2.1.2 Soil Cleanup to Background, p. 4-8
- 4d.2** Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 2
- 5a** NASA DEIS, 4.13.2.4 Traffic and Transportation, p. 4-161
- 7** Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 10

FEBRUARY 14, 2013 AUDIT REPORT

REPORT No. IG-13-007 (ASSIGNMENT No. A-12-011-01)

OFFICE OF AUDITS

**NASA'S ENVIRONMENTAL REMEDIATION EFFORTS  
AT THE SANTA SUSANA FIELD LABORATORY**

OFFICE OF INSPECTOR GENERAL

National Aeronautics and Space Administration REPORT No. IG-13-007

Final report released by:  
Paul K. Martin Inspector General

## Acronyms

AOC Administrative Order of Consent  
CEQ Council on Environmental Quality  
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act  
DOE U.S. Department of Energy  
DTSC California Department of Toxic Substances Control  
EIS Environmental Impact Statement  
EMD Environmental Management Division  
EPA Environmental Protection Agency  
FY Fiscal Year  
GSA General Services Administration  
NEPA National Environmental Policy Act  
OIG Office of Inspector General  
RCRA Resource Conservation and Recovery Act  
SB Senate Bill  
SSFL Santa Susana Field Laboratory  
TCE Trichloroethylene FEBRUARY 14, 2013  
REPORT NO. IG-13-007

## **OVERVIEW**

# **NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY**

## **The Issue**

The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.<sup>1</sup> Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site.

<sup>1</sup> The area has become much less remote over time. More than 500,000 people currently live in southern Ventura County, California, where the SSFL is located.

<sup>2</sup> DOE's predecessor agency was the Atomic Energy Commission.

NASA is responsible for administering 451.2 acres in two areas of the SSFL site, which includes 41.7 acres of Area I and all 409.5 acres of Area II. The Boeing Company (Boeing) owns and operates the remainder of the SSFL, and the DOE leased property in Area IV from Boeing. The Santa Susana site is home to at least 10 species of sensitive plants and at least 5 species of sensitive wildlife, as well as the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agencies conducted civilian nuclear research and energy development projects at the SSFL.<sup>2</sup> A partial meltdown at one of the nuclear facilities in 1959 led to a release of radioactive contaminants.

Although radioactive contamination remains a concern in the DOE portion of the SSFL, the primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid identified as a potential carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines, and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. While the Air Force was a large contributor to the TCE contamination, NASA – as the current administrator of the property – has assumed responsibility for the cleanup. OVERVIEW

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NASA, like all Federal agencies, is required to comply with laws and regulations that govern cleanup of contaminants left behind from Agency activities.<sup>3</sup> Generally, these laws require responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of those assessments. One of the principal factors considered in this type of assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard. The various clean-up levels potentially applicable to a site like the SSFL include background, residential, and recreational.<sup>4</sup>

<sup>3</sup> The three primary environmental laws are the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347; the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et seq.; and the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §6901 et seq.

<sup>4</sup> Background level means returning the site to its natural state prior to the introduction of contaminants. Residential level assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years. Recreational level assumes that an adult or child could be exposed several hours a day for about 50 days per year over a 30-year period without adverse health effects.

Boeing has publicly stated that it intends to preserve its portion of the SSFL site – by far the largest section – for use as open space parkland upon completion of cleanup activities. Similarly, NASA officials told us that the anticipated future use of the NASA portion of the SSFL site is for recreation. NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed consent orders with California’s Department of Toxic Substances Control (DTSC) agreeing to clean up groundwater and soil at the SSFL to residential exposure levels. Shortly thereafter, in October 2007, California Senate Bill No. 990 (SB 990) was enacted. SB 990 applies only to the SSFL and requires that the site be restored to either a “suburban residential” or a “rural residential (agricultural)” level, whichever will produce the lower permissible residual concentration for each contaminant. The legislation specifically prohibits the sale, lease, or other transfer of the property unless DTSC certifies that the land has undergone complete remediation.

In November 2009, Boeing filed a Federal lawsuit challenging SB 990 as violating the U.S. Constitution. In April 2011, a judge in the United States District Court for the Central District of California ruled in Boeing’s favor and declared the law unconstitutional. The State of California appealed that decision and oral arguments are expected before the U.S. Court of Appeals for the Ninth Circuit in early 2013.

In December 2010, NASA entered into a second agreement with the DTSC known as the Administrative Order of Consent for Remedial Action (AOC). Under the terms of the AOC, NASA agreed that the 2007 consent order would continue to govern its cleanup obligations related to groundwater at Santa Susana, but the Agency would be required to OVERVIEW

return the soil to its original state before any testing activities occurred – referred to in the AOC as “background” levels. NASA further agreed that it would complete soil cleanup to this standard by 2017.

To comply with the 2010 Order, NASA budget requests include proposed funding increases of approximately \$30 million per year from fiscal years (FYs) 2014 through 2017 (an additional \$120 million total for the 4 years). NASA estimates that cleanup costs for Santa Susana to the AOC standard could cost at least \$200 million. In contrast, estimates to clean the site to a standard suitable for residential and recreational use are in the range of \$76 million and \$25 million, respectively. Santa Susana is not the only pending environmental remediation project at NASA. According to Agency environmental management officials, several other projects pose greater risks to human health and the environment than Santa Susana.

The AOC includes a provision for NASA to follow the National Environmental Policy Act (NEPA), which requires the Agency to complete an Environmental Impact Statement (EIS) for its cleanup activities at Santa Susana.<sup>5</sup> As part of this process, NASA initially identified five possible alternatives for remediation of the site, including cleaning to residential and recreational use standards. However, NASA’s inclusion of alternatives other than cleanup to background levels caused concern among DTSC officials and California political leaders.

<sup>5</sup> An EIS is a detailed evaluation of the Agency’s proposed action and possible alternatives. The public, other Federal agencies, and outside parties may provide input into development of an EIS and are afforded an opportunity to comment on the resulting draft EIS.

In May 2012, DTSC sent a letter to the NASA Administrator to request that “NASA modify its...process to align itself with...a cleanup of the site to background levels...in compliance with the AOC” rather than evaluate less stringent cleanup alternatives. In addition, Senator Barbara Boxer from California asked the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies, whether NASA was legally required to consider cleanup options other than background level. After the CEQ advised the Senator that there was no such requirement, NASA limited its EIS process to consideration of only one cleanup standard – background levels.

Given the high cost of the SSFL cleanup and the unusual legal underpinnings of the AOC, we examined whether NASA’s plans to clean up environmental contamination at Santa Susana conform with the laws and standards that generally govern such remediation efforts and provide the best value to the taxpayer. Details of the audit’s scope and methodology are in Appendix A.

## Results

NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected

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future use of the site. Moreover, the cleanup is likely to cost the taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level itself that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that cleaning the SSFL to background levels could cost more than \$200 million, or more than twice the cost to clean it to residential levels and more than eight times the cost to clean it to a recreational use standard. In addition, because cleanup to background levels may require highly invasive soil removal, there is a risk that such a cleanup would result in significant damage to the surrounding environment and to archeological, historical, and natural resources at the site.

## Management Action

We recommend that the Administrator, with the assistance of the Associate Administrator for Mission Support, reexamine the Agency's current plans for cleaning the NASA-administered portion of the Santa Susana site and ensure that its environmental remediation is conducted in the most cost-effective manner in keeping with the expected future use of the property.

In accordance with our usual practice, we provided NASA with a draft of this report and requested the Agency respond to our recommendation. Typically, the Agency indicates whether it concurs with our recommendation and describes any corrective actions it plans to undertake to meet the intent of the recommendation. However, in this case NASA declined to indicate whether it agreed or disagreed with our recommendation.

Rather, after noting that NASA "fully appreciates" our recommendation, the Associate Administrator stated that the Agency will continue to work with the DTSC and local community stakeholders "within the requirements" of the AOC and at the same time will "make every effort to implement a [cleanup] program that will achieve both cost avoidance and protection of cultural and natural resources." In addition, the Associate Administrator noted several recent developments that may affect how the AOC is interpreted and implemented. (See Appendix F for Management's Response).

Although we are encouraged by NASA's pledge to work toward a cleanup that achieves cost avoidance and preserves cultural and natural resources, it is not clear that the Agency can achieve the most appropriate and cost-effective remediation effort given the constraints of the current AOC. Accordingly, our recommendation remains unresolved and we will continue to monitor the Agency's efforts to clean the Santa Susana site. FEBRUARY 14, 2013

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## **INTRODUCTION**

### **Background**

The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy directed by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.<sup>6</sup> Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site. NASA ended its testing activities at the Santa Susana site in 2006.

<sup>6</sup> The area has become much less remote over the past several decades. At the time of our review, more than 500,000 people live in southern Ventura County, California, where the SSFL is located.

<sup>7</sup> Pictographs are rock art paintings and petroglyphs are rock art that has been scored or cut into the rock surface.

As illustrated in Figure 1, the SSFL is divided into four areas. NASA is responsible for administering 41.7 acres in Area I and all 409.5 acres of Area II. NASA acquired Area II in 1973 and the Area I acreage in 1976 from the Air Force. The Boeing Company (Boeing) – which operated as both a contractor for the Government and in its private capacity – owns and operates the remaining 2,398.8 acres in Areas I, III, and IV. DOE leases property in Area IV from Boeing. The site is home to at least 10 species of sensitive plants, at least 5 species of sensitive wildlife, and to the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.<sup>7</sup>

## **Figure 1 - Santa Susana Field Laboratory**

Source: NASA Santa Susana Field Fact Sheet

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and other members of the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agency conducted nuclear research and energy development projects at Area IV of the SSFL, including nuclear operations (development, fabrication, disassembly, and examination of nuclear reactors, reactor fuel, and other radioactive materials) and large-scale experiments for testing fast breeder reactor components.<sup>8</sup> A partial meltdown in 1959 at a nuclear facility operated by a DOE predecessor agency led to the release of radioactive contaminants. As a result of these and other activities, various locations on the site contain radioactive and chemical contamination. Although DOE's predecessor agency issued a press release a few weeks after the meltdown incident, individuals and groups in California have raised concerns over the years about the adequacy of the public disclosures and the potential health risks posed by the contamination.

<sup>8</sup> DOE's predecessor agency was the Atomic Energy Commission.

The primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid that has been identified as a potential INTRODUCTION

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carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. NASA has determined that over the years more than 500,000 gallons of TCE were released to the ground at the Santa Susana site. While the Air Force was a large contributor to the TCE contamination at the SSFL, NASA – as the current administrator of the property – has assumed responsibility for the cleanup. See Figure 2 for NASA test stands and surrounding area at Santa Susana.

In October 2007, frustrated by the pace of clean-up efforts at Santa Susana, the California legislature enacted Senate Bill (SB) 990, which prescribes specific remediation requirements for the SSFL, including that the site be restored to accommodate either “suburban residential” or “rural residential” use, whichever will produce the lower permissible residual concentration for each contaminant.<sup>9</sup> The legislation specifically prohibits the sale, lease, sublease, or other transfer of the property unless the California Department of Toxic Substances Control (DTSC) certifies that the land has undergone complete remediation. In November 2009, Boeing challenged the constitutionality of SB 990 in Federal court. Although the company won its suit at the district court level, the State has appealed that ruling to the U.S. Court of Appeals for the Ninth Circuit.

<sup>9</sup> At the time SB 990 was enacted, “Suburban Residential” referred to safe exposure levels for a residential or community neighborhood area and “Rural Residential” referred to safe exposure levels for an agricultural or farmland area where food is grown or livestock is raised. “Background” and “Rural Residential” refer to similar levels of cleanup. At the time of preparation of NASA’s Cost Estimates, NASA’s EIS documents, and NASA’s EIS presentation to the community in 2012, the terminology for the exposure levels under consideration was more generalized and the levels identified were (1) Background, (2) Residential, (3) Industrial, (4) Recreational, and (5) No Action.

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## **Figure 2 - NASA Test Stands and Surrounding Area at SSFL**

Source: OIG (May 2012)

In 2009, NASA reported the SSFL as excess property to the General Services Administration (GSA), one of the first steps in the formal process of divesting itself of the property. GSA will decide how the NASA portion of the SSFL will ultimately be disposed of. While Boeing is cleaning its portion of the SSFL site – by far the largest section – to residential cleanup standards, it has publicly stated that it intends to preserve the area for use as open space parkland upon completion of its cleanup activities. Although they have no formal role in the ultimate disposition of the NASA-administered property, Agency officials said they also expect this portion ultimately will be used as a recreational area.

**Federal and State Laws Govern Environmental Remediation of Facilities.** A complex collection of Federal and state laws govern remediation of environmental contamination at sites like the SSFL. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the “Superfund,” addresses remediation at inactive and abandoned hazardous waste sites.<sup>10</sup> The Federal Government controls cleanup of areas designated as Superfund sites. In addition, the Resource Conservation and Recovery Act (RCRA) sets up an environmental corrective action program administered by the U.S. Environmental Protection Agency (EPA) and 43 authorized states and territories to work with responsible facilities to investigate and clean up hazardous releases.<sup>11</sup> Under RCRA, regulatory authority over site cleanup may be delegated to a state. The National Environmental Policy Act (NEPA) requires Federal

<sup>10</sup> The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), codified at 42 U.S.C. §9601 et seq. (1980)

<sup>11</sup> The Resource Conservation and Recovery Act (RCRA) of 1976, codified at 42 U.S.C. §6901 et seq. (1976)

agencies to consider the environmental impacts of their actions and reasonable alternatives to those actions.<sup>12</sup> Under the statute, agencies must publicly disclose their proposed actions (including alternatives), consider and address any comments they receive from the public following that disclosure, and prepare Environmental Impact Statements (EIS) for activities that will have a significant effect on the environment.<sup>13</sup> NEPA also created the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies.<sup>14</sup>

<sup>12</sup> The National Environmental Policy Act of 1969 (NEPA), as amended, codified at 42 U.S.C. §§ 4321-4347

<sup>13</sup> An Environmental Impact Statement (EIS) is a detailed evaluation of the Agency's proposed action and possible alternatives. The public, other Federal agencies and outside parties may provide input into development of an EIS and then are afforded an opportunity to comment on the resulting draft EIS.

<sup>14</sup> The Council on Environmental Quality oversees NEPA. The duties of the Council include gathering information on the conditions and trends in environmental quality; evaluating federal programs in light of the goals established in NEPA; developing and promoting national policies on environmental quality; and conducting studies, surveys, research, and analyses relating to ecosystems and environmental quality

<sup>15</sup> DTSC policy titled "Oversight and Supervision of Investigations and Removal and Remedial Actions at Hazardous Substance Sites," effective July 1, 1992.

Because Santa Susana is located in California, the state's environmental laws and regulatory apparatus also affect cleanup of the site. According to the DTSC policy, remediation efforts should "take into consideration the future land use of the site to ensure that remedial action protective of public health and the environment."<sup>15</sup> In addition, California enacted SB 990 in 2007 to address contamination at the SSFL.

Federal law requires responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of such assessments. These assessments determine the risk posed to human health and the environment by any contamination that will remain at the site upon completion of a cleanup. One of the principal factors considered in such an assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard.

For example, a site likely to be used for growing food would require a more extensive remediation effort, while one expected for industrial use would require a less stringent cleanup and therefore permit higher concentrations of contaminants to remain on the site. Under the normal assessment process, the reasonably foreseeable future use of a site is determined by considering several factors, including the current use of the land, general land use plans, topography and natural resources, cultural resources, and the presence of endangered species.

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Table 1 shows the various cleanup or remediation levels possible for a site like the SSFL and the underlying assumptions associated with each level.

<b>Cleanup Level</b>	<b>Definition (Assumptions for Establishment of Exposure Limits)</b>
Background	Returns the environment to its natural state prior to the introduction of contaminants.
Residential	Assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years without adverse health impacts.
Industrial	Assumes workers could remain on the remediated site for 8 to 10 hours per day, 250 days per year over a 25-year period without adverse health impacts.
Recreational	Assumes that an adult or child could be exposed several hours per day for about 50 days per year over a 30-year period without adverse health impacts.